

## Plant & Animal Genomes XVII Conference

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**P289** : Wheat, Barley, Rye, Oat, and related

### The WheatCAP Project Delivers Genomic Resources For Improved Wheat Breeding

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The design and deployment of new technologies is vital to maintain the competitiveness of the US wheat industry. In 2005, USDA-CSREES-NRI awarded a grant to the WheatCAP consortium to develop new genomic tools and knowledge to accelerate wheat breeding. Breeders from the major wheat-growing states and the four USDA-ARS small grains genotyping centers participate in the project. [GrainGenes](#) provides information technology support. The consortium is applying marker assisted selection (MAS) strategies to improve many traits, with a focus on disease and pest resistances (rusts, fusarium head blight and Hessian fly, among others) and quality (particularly baking, grain protein content, color and texture and gluten strength). In 2008, 270,000 MAS analyses were performed and participating breeders released 29 varieties and germplasm lines applying MAS. Collaborators are also developing longer-term public resources by mapping 19 populations, with an average of 413 markers per map. These populations are being phenotypically evaluated at an average of seven environments for QTL discovery related to complex traits. Single nucleotide polymorphisms (SNPs) were screened in the parent lines and 359 SNPs are being incorporated into the genetic maps. The WheatCAP project carries out an intensive extension and education effort. During 2008 almost 100 high-school, undergraduate and graduate students received training. Participants organized educational trips, lectures and hands-on workshops. More than 50 field days and 60 presentations were delivered to growers and industry. The project web site ([maswheat.ucdavis.edu](http://maswheat.ucdavis.edu)) hosts MAS and general laboratory protocols and educational documents and animations.